

## **REMARKS**

### **Response to Notice of Non-Compliant Amendment**

Claims 1-32, 46-50 and 52-53 are pending in the present application, with Claims 33-45 withdrawn from consideration. The Examiner has also further restricted Claims 1-13 but Applicants traverse this further restriction below, so these claims have not been designated herein as "withdrawn." The Notice of Non-Compliant Amendment stated that the Amendment and Response filed on November 28, 2003 did not meet the requirements of 37 C.F.R. §1.121 because the complete text of all pending claims, particularly the withdrawn claims, was not provided.

The present paper provides the complete text of all claims, including those that stand withdrawn and show the amendments of claims presented in the aforementioned Amendment and Response. In accordance with 37 C.F.R. §1.121(h) only the "Amendments to the Claims" section of the previously filed Amendment and Response is presented here. However, due to the new issues raised and addressed below with respect to Claims 45 and 46-50, Applicants below reproduce the remarks that had been previously presented in the Amendment mailed on November 25, 2003 (recorded as filed with the Patent Office on November 28, 2003).

### **Amendment of Claim 45**

Applicants have additionally amended Claim 45. Originally, Claim 45 inadvertently included an independent claim that had not been separately numbered. In a preliminary amendment, that separate claim was added as Claim 51 (now cancelled) but the superfluous language was not deleted from withdrawn Claim 45. By the present paper, Applicants respectfully request amendment of withdrawn Claim 45 to delete the superfluous language.

### **Examination of Claims 46-50 Requested**

Applicants note that, in the course of responding to the Notice of Non-Compliant Amendment, the discovery that Claims 46-50 have not been examined. These claims were originally included in Species I of the Examiner's Restriction Requirement mailed on December 16, 2002. In response to that restriction requirement, Applicants elected Species I but inadvertently failed to list Claims 46-50 as part of Species I.

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Because Claims 46-50 have not been cancelled and because they were a part of the species identified by the Examiner and elected by the Applicant, Applicant respectfully request examination of these claims and submit that the claims are in condition for allowance.

**RE-PRODUCED REMARKS FROM PRIOR SUBMISSION**

Claims 1-50 and 52-53 are pending in the present application. Of these, Claims 1-13 were found to be subject to restriction and were withdrawn from consideration by the Examiner. The restriction requirement is discussed below. Claims 20-32 were rejected as anticipated by a prior art reference. As discussed below, Claim 20 has been amended herein to recite that at least two of the deposited metal oxide layers differ in their composition. This amendment is fully supported by the specification as filed, for example in paragraphs [0040] and [0041].

**Allowed Claims**

Applicants are pleased to note that the Examiner indicated that Claims 14-19 and 52-53 are allowed.

**Restriction Requirement**

The Examiner issued a Restriction Requirement with respect to Claims 1-13. Specifically, the Examiner found that Applicants' amendment of Claims 1-13 to recite "alternating, self-saturating surface reaction" in the Amendment and Response filed May 27, 2003, resulted in these claims being directed to an invention that is independent or distinct from the invention originally claimed. Applicants respectfully disagree and traverse the restriction.

First, Applicants note that this amendment was made in order to clarify that the term "atomic layer deposition (ALD) process" recited in Claim 1 had the meaning explicitly ascribed to it in the specification as filed. In particular, the specification as filed states that "for the purpose of the present invention, an atomic layer deposition (ALD) process...designates a process where the deposition of a thin film onto a substrate is based on *sequential and alternating self-saturating surface reactions* from at least two separate gaseous source chemicals." pp. 11-12 (*Emphasis added*). In view of this definition, one of skill in the art would recognize that the atomic layer deposition process of Claim 1 as filed included alternating self-saturating surface reactions. Making this attribute explicit in the Claim did not change the nature of the claimed invention.

Furthermore, even without the explicit definition provided in the specification, the skilled artisan would understand that the term "atomic layer deposition (ALD)," as recited in Claim 1 as

originally filed, is a term of art. In particular, one of skill in the art would recognize that ALD processes are characterized by particular features, including alternating self-saturating surface reactions.

Claim 1 originally required that at least one of the ferromagnetic layers is formed by an atomic layer deposition process. General knowledge in the art and the explicit teaching in the specification make clear that such a process includes self-saturating surface reactions. The explicit recitation of this feature of the ALD process does not change the nature of the claimed invention in any way. Thus, Applicants traverse the Examiner's restriction requirement and submit that Claims 1-13 are in condition for allowance.

#### Claim Rejections

The Examiner rejected Claims 20-32 under 35 U.S.C. § 102(e) as being anticipated by Utriainen et al. (Applied Surface Science 157 (2000), pp. 151-158). In particular, the Examiner found that Utriainen et al. disclose depositing a plurality of metal oxide layers by ALD and converting at least one of the layers to elemental metal.

Claim 20 has been amended to recite that "at least two of the metal oxide layers *differ in composition*." (*Emphasis added*). In comparison, Utriainen et al. teach depositing a metal oxide thin film of *uniform composition* by ALE and then converting it to the metallic form by a separate reduction step. p. 151. In other words, Utriainen et al. teach the deposition of multiple *identical* monolayers using standard ALE to form a single metallic thin film. See, Abstract, p. 151; p. 157. Accordingly, Utriainen et al. do not teach or suggest depositing a plurality of metal oxide layers on a substrate by atomic layer deposition (ALD), wherein at least two of the metal oxide layers *differ in composition*," as recited in amended Claim 20. Claims 21-32 depend from Claim 20 and thus have all the features thereof, as well as further distinguishing features. Thus, Applicants submit that Claims 20-32 are in condition for allowance and respectfully request the same.

As noted above, Applicants have traversed the Examiner's restriction requirement as applied to Claims 1-13. Although Claims 1-13 have not been rejected over Utriainen et al., Applicants note that the reference does not teach "a first ferromagnetic layer...a dielectric layer over the first ferromagnetic layer; and....a second ferromagnetic layer over the dielectric layer...,"

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as recited in Claim 1. Accordingly, Applicants submit that Claims 1-13 are allowable over Utriainen et al.

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### CONCLUSIONS

In view of the complete "Amendments to the Claims" section provided and additional Amendments and Remarks herein, Applicants submit that the Amendment and Response to Office Action filed on November 28, 2003 is in condition for entry and respectfully request its consideration. If any issues remain, the Examiner is invited to telephone Applicants' representative at the number provided below in order to resolve such issues promptly.

Respectfully submitted,

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